

Michigan Department of Consumer & Industry Services  
Bureau of Construction Codes  
Electrical Division  
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## **Journeyman and Master Electrician Examination Content Description**

The journeyman exam covers entry level knowledge of the electrical industry. The master exam covers additional knowledge required to plan and supervise electrical installations. In addition to the description of each category, applicants should have the ability to read plans and drawings, and apply knowledge of relevant safety procedures and requirements. Description of the content areas are as follows:

### **I. Grounding and Bonding**

Determination of system and circuit grounding requirements, methods, and locations of grounding connections. Choosing proper size grounding conductors, bonding of enclosures, equipment, and interior metal piping systems.

### **II. Branch Circuits, Wire Connections, and Devices**

Knowledge of circuit classifications, ratings, design, and use requirements. Knowledge and calculation of branch circuit loads. Application of code rules covering electrical outlets and devices, including wiring connectors and methods related to signs.

### **III. Conductors**

Determination of ampacity, type of insulation, usage requirements, methods of installation, protection, support, and termination. Includes calculation of voltage drop and derating factors.

### **IV. General Knowledge of Electrical Trade**

Terminology and practical calculations such as power factor, voltage, and current ratings of equipment.

### **V. Motors and Control of Motors and Equipment**

Knowledge of code rules governing installations of motors and controls. Includes calculations for motor feeder and branch circuits, short circuit, ground fault, overload protection, and disconnecting means. Knowledge of all control circuits and motor type application and usage.

### **VI. Services and Feeders**

Knowledge of code rules covering services. Calculation of electrical loads and determination of proper size, rating and type of service, and feeder conductors.

## **VII. General Use Equipment**

Knowledge of code rules covering appliances, heating and air conditioning equipment, generators, transformers, etc.

## **VIII. Overcurrent Protection**

Knowledge of application of fuses, circuit breakers, and all types of protective devices for conductors and equipment. Includes rules on taps and splices.

## **IX. Raceways**

Knowledge of all types of raceways and their uses. Determining proper size, conductor fill, support, and methods of installation.

## **X. Special Occupancies and Equipment**

Knowledge of code rules as they apply to hazardous locations, health care facilities, places of assembly, etc. Includes code rules on signs, welders, industrial machinery, swimming pools, etc.

## **XI. Boxes, Cabinets, Panelboards, and Non-Raceway Enclosures.**

Application of proper type, use, and support of boxes and cabinets, etc. Includes calculation of proper size and rating.

## **XII. Low Voltage Circuits and Equipment**

Knowledge of circuits and equipment characterized by usage and electrical power limitations, which differentiate them from electric light and power circuits. Includes remote-control, signaling, and power limited circuits.

## **XIII. Lighting and Lamps**

Knowledge of all types and applications of lighting fixtures, ratings, requirements for occupancies, special provisions, clearances, etc. Includes load calculations for lighting.

## **XIV. State Laws, Rules, and Code Amendments**

Knowledge of the Electrical Administrative Act, P.A. 217 of 1956, as amended, and the

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Construction Code Act, P.A. 230 of 1972, as amended. Includes Part 8 Code Rules for adoption and amending the National Electrical Code.